ADVANCED COMBAT DIRECTION SYSTEM (ACDS) BLOCK I

Navy ACAT II Program*

Total Number of Systems:	5
Total Program Cost (TY$):	$296.8M
Average Unit Cost (TY$):	$10.3M back fit/ forward fit
Full-rate production:	N/A

Prime Contractor

Raytheon Systems Company
Naval and Maritime Systems Division,
San Diego, CA

**See program status under Background Information*

SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2020

The AN/SYQ-20 Advanced Combat Direction System (ACDS) Block 1 consists of computer program software and associated hardware for non-Aegis combatant ships (aircraft carriers and selected amphibious warfare ships). ACDS Block 1 provides extended range display, expanded track capacity, Joint Tactical Information Distribution System interoperability, modifiable doctrine, display of mapping information, automatic gridlock, and doctrine-controlled multi-source identification. AN/SYQ-20 hardware includes computers, a display system with consoles, data terminal sets, automatic data processor, and automated status boards.

ACDS Block 1 is a combat direction system for aircraft carriers and amphibious warfare ships that supports the ***Joint Vision 2020*** concept of ***full-dimensional protection*** by providing control for a final layer of self-protection against threat "leakers" (air, surface, sub-surface) for individual ships. By ensuring such protection, ACDS Block 1 contributes indirectly to the concept of ***precision engagement***, enabling strike operations against targets to be executed from these platforms.

BACKGROUND INFORMATION

ACDS Block 1 represents the second phase of implementation of the Combat Direction System improvement plan of 1981, with ACDS Block 0 representing the initial phase. The Block 1 program was restructured in April 1991. Further adjustment occurred in FY93, targeting FY97 for fleet delivery of the software. Work to address deficiencies observed during 1997 testing delayed OPEVAL and the full production decision. OPEVAL was conducted in February 1998 in the Atlantic Fleet and Puerto Rican operating areas. As required by DOT&E, the OPEVAL included operations in a battle group environment. Based on OPEVAL results, ACDS Block 1 was assessed as neither operationally effective nor operationally suitable. Further OT&E, conducted in FY99, indicated that although improvement had been made, ACDS Block 1 was still deficient in certain areas such as human machine interface design (excessive actions required of operators to engage targets), computer program maintainability, and display console lockups. Subsequently and contrary to original plans, it was determined that ACDS Block 1 will be installed in no more than five ships (USS JOHN F. KENNEDY, USS DWIGHT D. EISENHOWER, USS WASP, USS NIMITZ, and USS IWO JIMA).

TEST & EVALUATION ACTIVITY

During FY00, ACDS Block 1 T&E was conducted as part of the risk-reduction T&E for the Cooperative Engagement Capability (CEC) OPEVAL. DT&E was conducted during May, September, and December 2000. The September period included one day of independent OT&E. A DOT&E representative observed the testing.

TEST & EVALUATION ASSESSMENT

Preliminary results from the September 2000 OT indicate improved reliability and stability of ACDS Block 1 relative to its performance during the FY99 OT and during the May 2000 CEC OT&E. Data are still being analyzed.

LESSONS LEARNED

Both the FY98 OPEVAL and subsequent OT provided reaffirmation of a lesson learned from earlier testing with other systems: performance of software-intensive systems intended to support control of complex defense missions (especially against fast-moving air threats) can only be adequately tested in a realistic operational environment. In the case of ACDS Block 1, this was done and included at-sea operations by the ACDS Block 1 ship with accompanying ships, along with a realistic number of air targets for radar tracking, identification, and threat prioritization by fleet operators.